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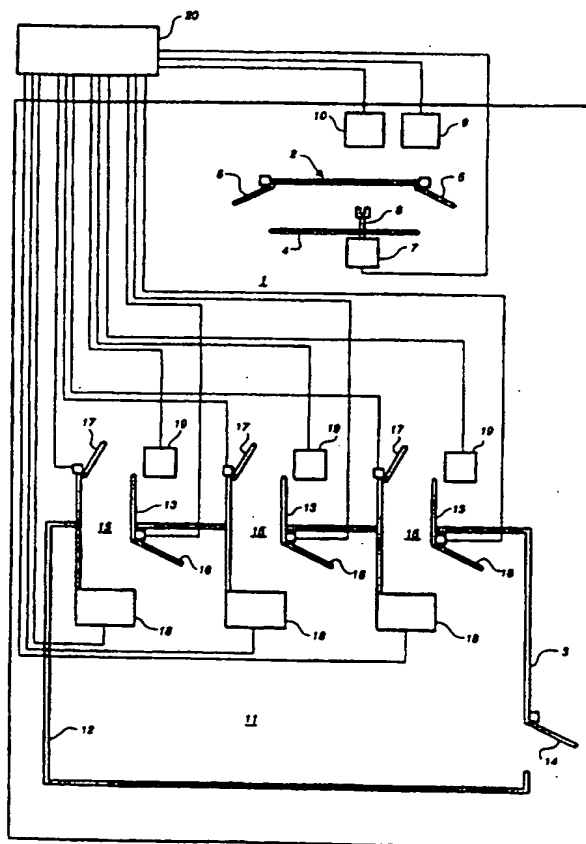
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(54) Title: AN ARRANGEMENT FOR AND A METHOD OF MANAGING A HERD OF FREELY WALKING ANIMALS

## (57) Abstract

An arrangement is provided for managing a herd of freely walking animals. The arrangement comprises an area (1) for receiving the animals, a milking station (2) located in said area, means for automatic milking and a separation device (3) for separating an animal which should be subjected to any kind of special treatment. The animals leaving the milking station (2) have to enter the receiving area (1), and the separation device (3) is only accessible from the receiving area (1).



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5 An arrangement for and a method of managing a herd of  
freely walking animals

TECHNICAL FIELD OF THE INVENTION AND PRIOR ART

10 The present invention relates to an arrangement for  
managing a herd of freely walking animals, comprising  
an area for receiving the animals, a milking station  
located in said area and having an exit, means for  
automatic milking of an animal in the milking  
15 station, and a separation device located in said area  
for separating an animal from the herd. The invention  
also relates to a method of managing a herd of  
animals freely walking in a receiving area.  
Furthermore, in a second aspect of the invention, it  
20 relates to an arrangement for managing a herd of  
freely walking animals, comprising an area for  
receiving the animals and a separation device located  
in said area for separating an animal from the herd,  
said device comprising enclosure means defining a  
25 separation zone, and at least one entrance device for  
permitting passage from the receiving area to the  
separation zone. Furthermore, in a third aspect of  
the present invention, it relates to a separation  
device for separating an animal from a herd of freely  
30 walking animals, comprising enclosure means defining  
a separation zone, and at least one entrance device  
for permitting passage from an area for receiving the  
herd to the separation zone, said entrance device  
comprises a first stall, having a front gate device  
35 which in an open state permits passage from the first  
stall to the separation zone and in a closed state

prevents passage between the first stall and the separation zone.

Automatic milking of cows is known. Automatic milking  
5 may take place in one or more automatic milking  
stalls provided in an area in which the animals are  
allowed to walk about freely and find their way  
individually to the milking stalls. The cows are  
automatically identified in each stall with the aid  
10 of a computer connected to identification means. By  
means of the computer, in which facts concerning each  
cow when she was last milked, etc. are stored, a  
milking robot is activated. The stall also comprises  
retaining gates which are automatically closed to  
15 retain the cow during milking and opened to let the  
cow leave the stall. Traditionally, cows are milked  
twice a day. Because of high labour costs it was not  
interesting to increase the number of milkings per  
day as long as milking was performed manually. It is  
20 however recognized that milking a cow three to four  
times a day has proved to be of less detriment to  
her, since the udder is not filled to its maximum  
between each milking. Such a milking procedure  
corresponds more closely to the behaviour of the  
25 calves and therefore results in healthier cows. As a  
side effect, however, it is possible to increase the  
total milk production from one cow by 15-25% by  
increasing the number of milkings per day. By means  
of automatic milking machines it is not only  
30 possible, but would also be economically interesting  
to milk the cows more often than twice a day, since  
the labour costs are not any longer critical. In this  
case it is rather the high investment cost which is  
the limiting factor. Therefore, in order to reach a  
35 high utilization of the capacity of such automatic  
milking machines and in order to reach such a high

milking frequency by a reasonable number of automatic milking stations, it is desirable or even necessary to enable the cow to develop a trust in the milking station and the automatic milking machine. Only then  
5 she will voluntarily and frequently enter the milking station. In view thereof it is of course very important that she does not associate the milking station with anything which hurts or is disagreeable to her.

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In order to find out if milking of a cow entering the milking station should be performed, she must be examined to find out whether there is any hinder to milking, for example the cow may be infected by a  
15 disease, blood might come in the milk, or the udder and the teats might be injured. Such illness or defects should be treated and cured before the cow can participate in the normal milk production. However, such treatment may hurt the cow or at least  
20 be disagreeable to her. Therefore, the performance of such treatment is a negative experience for the cow, which she, due to her very good memory, certainly will remember. Consequently performing such treatment in the milking station may lead to the cow  
25 associating the milking station with a negative experience. This makes the milking station less attractive to the cow and therefore in a system based on voluntariness she might not visit the milking station as often as would be desirable in order to  
30 reach a high total milk production per day.

It has been proposed in the past to provide means for separating the cow from the milking station to a separation area, in which medical treatment of the  
35 cow may take place. Also in this case the cow may associate the milking station with a negative

experience of the medical treatment, since she is treated directly after being transferred from the milking station.

5 It is also known to provide a separation device for separating an animal from an area receiving a herd of freely walking animals, comprising a separation zone, enclosed by enclosure means, and at least one  
10 entrance device for permitting passage from said receiving area to the separation zone.

WO-A-8704898 discloses a method and a device for separating selected animals from a herd. To this end, the animals are brought to a sluice comprising a  
15 computer for identification and controlling feed distribution, and additional devices for the control of outlets or passages. The separation of selected animals is obtained by the outlets and passages being movable to close and open different outlet areas.

20 US-A-5 183 008 discloses a livestock sorting system having an entrance with an identification sensor and first and second aisles extending from the entrance. An automatically controlled gate is actuated between  
25 two positions to lead the livestock to either of the two aisles.

DE-C-3 702 465 discloses a method and a device for milking and feeding freely walking cows carrying an  
30 identification device. The cows are identified and led to a gate which may be in two positions opening to the milking stalls or the feeding stalls. A cow to be milked is led to the milking stalls and the cows which should not be milked are led to the feeding  
35 stalls or back to the free walking area.

SU-A-1 813 383 discloses a separation device comprising enclosure means defining a separation zone, and at least one entrance device for permitting passage from an area to the separation zone. The entrance device comprises a stall, having a front gate device which in an open state permits passage from the stall to the separation zone and in a closed state prevents passage between the stall and the separation zone.

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#### SUMMARY OF THE INVENTION

The object of the present invention is to permit treatment of an animal without negatively influencing a desired behaviour of the animal.

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This object is obtained by the arrangement initially defined which is characterized in that the exit of the milking station leads to the receiving area and in that the separation device is accessible by an animal from the receiving area. By means of this arrangement the animal when leaving the milking station, has to enter the receiving area, where the animal is allowed to walk about freely among the other animals of the herd. From the receiving area the animal is then free to enter the separation device, and consequently the animal will not associate any treatment in the separation device with the automatic milking, but will associate the stay in the automatic milking station merely with positive experiences.

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25  
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According to a preferred embodiment the separation device comprises enclosure means defining a separation zone, and at least one entrance device forming an animal passage leading from the receiving

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area to the separation zone and adapted to open and close said passage, such that animals entering the separation device may be kept separated from the animals in the herd during for example medical  
5 treatment of the separated animal.

Preferably identifying means is provided for identifying an animal entering said passage of the entrance device and an animal entering the milking  
10 station.

Another embodiment of the invention provides for examination means for examining the condition of the animal, for example with respect to illness, blood in  
15 the milk, injuries of the udder and the teats etc. The result of such an examination may be used for determining whether the animal should be separated. Preferably the examination means is provided in the milking station. Thereby examination may be performed  
20 before automatic milking is initiated or during automatic milking by examining the milk.

According to a further embodiment the control means is connected to the identification means, the  
25 examination means and the entrance device. Thereby the result of the condition examination of an identified animal can be used to automatically open the passage, and thus the identified animal is able to move into the separation zone.

30 Preferably the entrance device comprises a stall, the interior of which comprises said animal passage. The different stalls normally provided in a barn are places which the animals are likely to enter.  
35 Preferably the stall comprises a gate which permits passage to the separation zone.



According to an embodiment the control means is connected to the gate device. Thus, opening of the gate device leading to the separation zone can be initiated by the control device when an animal which is to be separated is present in the stall.

According to a further embodiment the stall is also provided with an additional gate device which is controlled by the control means and which can be closed to prevent the animal being present in the stall to go backwards back to the receiving area.

According to a further embodiment the stall comprises a feeding device for feeding an animal being present in the stall. Feeding stalls have an enticing effect on animals so that the animals are very likely to enter the feeding stalls often and voluntarily. Preferably the feeding device is adapted to feed the animals with concentrate.

According to a further embodiment the separation device comprises at least one exit device forming a further animal passage leading from the separation zone to the receiving area and adapted to open and close said further animal passage. By such an exit device, it is possible to lead the animal back to the receiving area after a certain period of time. It may for example be desirable to separate, for a certain period of time, an animal which is very active and has visited the milking station several times within a short time period, thereby hindering less active animals from reaching the milking station. Moreover, even if an animal is suffering from a disease it might be desirable to let her out of the separation zone if no action has been taken to cure the disease

within a certain period of time, since otherwise her position in the herd of animals may be disturbed.

Further embodiments of the exit device are defined in  
5 claims 14 - 15.

According to another embodiment the receiving area comprises a first zone and a second zone. By dividing the receiving area in such zones, it is possible for  
10 example to arrange the milking station indoors and provide an area outdoors where the animals may walk about freely. Thereby, a gate device may be provided between the first zone and the second zone.

15 The object defined above is also obtained by a method of managing a herd of freely walking in a receiving area, comprising:

- examining the condition of an animal in connection with automatic milking in a milking station located  
20 in the receiving area, for example with respect to illness, blood in the milk, injuries of the udder and the teats, in order to determine whether the animal should be subjected to any kind of treatment,
- storing an identification of the animal if the  
25 latter is to be treated as a result of the examination,
- using the stored identification for identifying the animal participating in an activity other than automatic milking, and
- 30 - separating the identified animal from the herd.

Such a method permits at any time separation of an animal which has left the milking station and is walking about freely. With such a method there is no  
35 risk that the animal should associate the separation with the automatic milking. Preferably the other

activity takes place remote from the automatic milking. A great distance between the automatic milking station and the separation is advantageous.

- 5 According to a further embodiment of the method the other activity comprises feeding of the animal, for example with concentrate, which has a strong enticing effect on the animal.
- 10 The object defined above is also obtained by the arrangement in the second aspect of the invention as initially defined which is characterized in that the entrance device comprises a stall having a front gate device which in an open state permits passage from  
15 the stall to the separation zone and in a closed state prevents passage between the stall and the separation zone. Such a separation device can be provided anywhere in the receiving area, for example a barn, for freely walking animals. Thus the animals  
20 are free to enter such a separation device from the receiving area without associating the separation with any other treatment, such as medical treatment, massaging, or milking, taking place remote from the separation device. According to a preferred  
25 embodiment, the stall has a rear gate device. Such a rear gate device prevents an animal, which is to be separated, from going backwards back to the receiving area.
- 30 According to further embodiments, identification means and control means are provided for automatically controlling the state of the gates, such that when an identified animal present in the stall is to be separated the rear gate device is  
35 closed and the front gate device is opened.

According to a further embodiment the stall comprises a feeding device which preferably may be arranged to dispense concentrate.

- 5 Further embodiments of this arrangement is defined in the dependent claims 28 - 34.

10 The object defined above is also obtained by the separation device initially defined, which is characterized in that it comprises an exit device having a second stall with a front gate device which in an open state permits passage from the second stall to said area and in a closed state prevents passage between the second stall and said area.

- 15 Preferred embodiments of the separation device are defined in claims 36 - 40.

#### 20 BRIEF DESCRIPTION OF THE DRAWING

Different embodiments of the present invention will now be described with reference to the accompanying drawings, in which

- 25 Fig 1 shows a schematical view from above of an arrangement for managing a herd of freely walking animals,
- Fig 2 shows a perspective view of the arrangement,
- 30 Fig 3 shows a schematical view from above of a modified arrangement for managing a herd of freely walking animals,
- Fig 4 shows a perspective view of the arrangement in Fig 3, and
- 35 Figs 5 - 7 show in a schematical view from above of the arrangement, alternative dispositions of different parts.

## DESCRIPTION OF VARIOUS EMBODIMENTS OF THE INVENTION

The figures show an arrangement comprising a receiving area 1 for receiving a herd of freely walking animals. In the following description reference will be made only to cows. It is however clear that the present invention also can be applied to other animals, especially such animals which may be milked, for example sheep, goats, buffaloes and horses. The receiving area 1 may for example be a barn or an area provided outdoors, which may be enclosed by a fence. In the receiving area 1 there is provided a milking station 2 and a separation device 3. The milking station 2 comprises a stall 4 with an entrance gate 5 and an exit gate 6. Furthermore, the milking station 2 comprises an automatic milking machine 7 which is provided with a robot arm 8 for applying teat cups (not shown) on the teats of the cow present in the stall 4. The milking station 2 also comprises an identification device 9, for identifying a cow entering the milking stall 4, and an examination device 10 for examining the condition of the animal with respect to illness, for example mastitis, blood in the milk, injuries on the udder and the teats. The examination device 10 or an additional examination device may be provided outside the milking station 2. Furthermore, the examination device may comprise means for making activity measurements on the cow in order to determine if she is on heat, or means for identifying cows being too active in respect of the milking station, i.e. cows visiting the milking station more than a certain number of times per day will hinder less active cows from being milked, and therefore it may be desirable

to separate such highly active cows, at least for a certain period of times.

The separation device comprises a separation zone 11 which is enclosed by an enclosure 12, for example a fence. In the separation zone 11 any kind of treatment may be performed on the cow which has been separated. The treatment might be any medical treatment, for example curing a disease by an injection. It might also be insemination or manual milking in the case that the automatic milking did not succeed. Finally it might be applying an earmark or even that the cow should be separated to be brought to slaughter. In the enclosure 12 there are provided three entrance devices 13 and an exit device 14 to permit removal of a cow from the separation zone 11. The entrance devices 13 are forming animal passages 15 leading from the receiving area 1 to the separation zone 11. However, it should be noted that more or less such entrance devices 13 might be provided. Each entrance device comprises a stall 13 having a front gate device 16 and a rear gate device 17. In each stall 13 there is provided a feeding device 18. The feeding device 18 may be of the type which offers the cows concentrate. Such feed is particularly attractive to the cows and therefore they frequently visit such feeding stalls. Moreover, when entering the stall 13 for eating concentrate, the cows need only to be present in the stall 13 for a short period of time. The feeding device 18 may also be of the type which offers the cows ensilage or a mixture of ensilage and concentrate. Furthermore, there is provided an identification device 19 at each entrance device for identifying a cow entering the stall 13.

The exit device 14 may be in a form of a manually operated gate as disclosed in Figs 1 and 2, or, as disclosed in Figs 3 and 4, a device similar to the entrance devices 13. This means that the exit device 14 is forming an animal passage 15, leading from the separation zone 11 to the receiving area 1, and comprising a stall 14 having a front gate device 16, a rear gate device 17 and a feeding device 18 of the same type as in the entrance device stalls. Furthermore, an identification device is provided at the exit device 14 for identifying the cow entering the exit device stall 14.

For controlling the arrangement a control device 20 is provided. As can be seen in Figs 1 and 3 the control device 20 is connected to the entrance gate 5 and the exit gate 6, the automatic milking machine 7, the identification device 9, and the examination device 10. The control device 20 may also be connected to the entrance devices 13 and, as disclosed in Figs 3 and 4, the exit device 14, i. e. each front gate device 16, each rear gate device 17, each feeding device 18, and each identification device 19.

As may be seen from Figs 5, 6, 7, the receiving area 1 may be divided into two zones, a first zone 21 and a second zone 22. The first zone 21 may be provided indoors, outdoors or have an indoor and an outdoor area, and in the same way the second zone 22 may be provided indoors, outdoors or have an indoor and an outdoor area. Thereby, as disclosed in Fig 5, the milking station 2 and the separation device 3 may be provided in the first zone 21. As may be seen, both the entrance devices 13 and the exit device 14 of the separation device 3 are leading from and to,

respectively, the first zone 21. Alternatively, as may be seen in Fig 6, the entrance devices 13 of the separation device 3 may be arranged such that they are accessible from the first zone 21 and the exit device 14 is leading to the second zone 22. Fig 7 discloses two possible locations for the separation device in the second zone 22.

The first zone 21 and the second zone 22 may be separated by a fence 23. In the fence 23 a gate device 24 is provided to give access to the two zones 21, 22. In order to be able to control the cow traffic between the first zone 21 and the second zone 22, the gate device 24 may be connected to and controlled by the control device 20. Thereby, an identification device 25, which also is connected to the control device 20, should be provided in the proximity of the gate device 24, for identifying a cow approaching the gate device 24. Thus, it is possible to permit or deny access to the first and second zone 21 for an individual cow.

The arrangement functions as follows. The cows are staying in the receiving area 1. A cow which needs to be milked enters voluntarily the milking station 2. There she is identified by the identification device 9, undergoes a condition examination by the examination device 10 and is milked by the automatic milking machine 7. The condition examination may be performed by optical means (not shown) to detect an external injury on the udder and the teats or that the udder and the teats are not clean. The condition examination may also be performed by measurements on the milk, concerning for example conductivity or temperature for detecting diseased cows. Furthermore,



it is possible to measure the presence and the quantity of different microbes in the milk.

The result of the examination is stored and processed  
5 by the control device 20. If the result does not indicate any defects the milk is delivered and the cow leaves the milking station 2 through the exit gate 6 and enters the receiving area 1. If on the other hand the result indicates a disease or some  
10 other defect the milk is transported to a waste tank and the cow leaves the milking station 2 through exit gate 6 and enters the receiving area 1. Furthermore, if the robot arm 8 of the milking machine 7 does not succeed in bringing the teat cups on the teats the  
15 exit gate 6 is opened so that the cow might leave the milking station 2 and enter the receiving area 1. In the receiving area 1, the cow is allowed to walk about freely again and will after a while enter one of the feeding stalls 13. If the examination result  
20 indicates that a specific cow should be separated due to any of the defects mentioned above, due to the fact that milking did not succeed, or that the cow should be inseminated etc., the rear gate device 17 will be closed when this specific cow has entered the  
25 stall 13 and is identified by the identification device 19. In the stall 13 the cow might be offered feed through the feeding device 18. However, the front gate device 16 is opened by means of the control device 20, and thus the cow has to enter the  
30 separation zone 11. Thereafter, the front gate device 16 is closed and any treatment could be performed on the cow so separated. After the treatment the cow might be removed to the receiving area through the exit gate 14.

For the cows which should not be separated the stalls 13 are functioning as normal feeding stalls, i.e. cows entering the stalls 13 for eating might after the eating has finished leave the stall 5 13 backwards through the rear gate device 17. It is an advantage if all of the feeding stalls 13 in the receiving area 1 are entrance devices forming passages 15 leading to the separation zone 11, since in this case the cows cannot avoid a feeding stall in 10 which they might be separated.

To sum up, the arrangement and the separation device permit a way to separate automatically a cow from a herd, which cow for some reason should be subjected 15 to special treatment, such that the cow cannot associate this treatment with the automatic milking or any other treatment and therefore the separation will not influence the behaviour of the cow concerning her willingness to enter the milking 20 station or a stall for the performance of said other treatment.

The present invention is not limited to the embodiments disclosed above but may be modified 25 within the scope of the claims. E.g. more than one separation device 3 may be provided within the receiving area 1.

Claims

1. An arrangement for managing a herd of freely walking animals, comprising an area (1, 21, 22) for  
5 receiving the animals, a milking station (2) located in said area and having an exit (6), means (7) for automatic milking of an animal in the milking station, and a separation device (3) located in said area for separating an animal from the herd,  
10 characterized in that the exit (6) of the milking station (2) leads to the receiving area (1) and in that the separation device (3) is accessible by an animal from the receiving area (1, 21, 22).
- 15 2. An arrangement according to claim 1, characterized in that the separation device (3) comprises enclosure means (12) defining a separation zone (11) and at least one entrance device (13) forming an animal  
20 passage (15) leading from the receiving area (1, 21, 22) to the separation zone (11) and adapted to open and close said passage.
3. An arrangement according to claim 2, characterized by identification means (9, 19) for identifying an  
25 animal entering said passage (15) of the entrance device (13) and an animal entering the milking station (2).
4. An arrangement according to claim 3, characterized by examination means (10) arranged to examine the  
30 condition of an animal in the milking station (2), e.g. with respect to illness, blood in the milk, injuries of the udder and the teats, activity of the animal, etc.

5. An arrangement according to claim 4, characterized  
by control means (20) adapted to record an animal in  
the milking station (2) identified by the  
identification means (9) and requiring treatment as a  
5 result of a condition examination of the animal by  
the examination means (10).

6. An arrangement according to claim 5, characterized  
in that the control means (20) is adapted to control  
10 the entrance device (13) to open said passage (15) of  
the latter in response to the identification means  
(19) identifying a recorded animal entering said  
passage (15), whereby said recorded animal is able to  
move into the separation zone (11).

15 7. An arrangement according to claim 6, characterized  
in that the entrance device comprises a stall (13),  
the interior of which comprises said animal passage  
(15).

20 8. An arrangement according to claim 7, characterized  
in that the stall (13) has a gate device (16) which  
in an open state permits passage between the stall  
(13) and the separation zone (11) and in a closed  
25 state prevents passage between the stall (13) and the  
separation zone (11).

9. An arrangement according to claim 8, characterized  
in that the control means (20) is adapted to control  
30 the gate device (16) to change between its opened and  
closed states.

10. An arrangement according to claim 9,  
characterized in that the stall (13) has an  
35 additional gate device (17), which in an open state  
permits passage between the stall (13) and the

receiving area (1) and in a closed state prevents passage between the stall (13) and the receiving area (1).

- 5 11. An arrangement according to claim 10, characterized in that the control means (20) is adapted to control the additional gate device (17) to change between its opened and closed states.
- 10 12. An arrangement according to any one of claims 7 - 11, characterized in that the stall (13) comprises a feeding device (18) for feeding an animal being present in the stall (13), for example with concentrate.
- 15 13. An arrangement according to any one of claims 2 - 12, characterized in that the separation device (3) comprises at least one exit device (14) forming a further animal passage leading from the separation zone (11) to the receiving area (1) and adapted to open and close said further animal passage.
- 20 14. An arrangement according to claim 13, characterized in that the exit device (14) comprises a further stall (15), the interior of which comprises said further animal passage, and that said further stall (15) comprises a gate device (16) which in an open state permits passage between said further stall (15) and the receiving area (1) and in a closed state prevents passage between said further stall (15) and the receiving area (1).
- 25 15. An arrangement according to claim 13 or 14, characterized in that said exit device (14) comprises a feeding device (18).
- 30 35

16. An arrangement according to any one of claims 1 - 15, characterized in that the receiving area comprises a first zone (21) and a second zone (22).

5 17. An arrangement according to claim 16, characterized in that the milking station (2) is provided in the first zone (21).

10 18. An arrangement according to claim 16 or 17, characterized in that the separation device (3) is provided in the first zone (21).

15 19. An arrangement according to any one of claims 16 - 18, characterized in that gate device (24) is provided between the first zone (21) and the second zone (22).

20. A method of managing a herd of animals freely walking in a receiving area, comprising  
20 - examining the condition of an animal in connection with automatic milking in a milking station located in the receiving area, for example with respect to illness, blood in the milk, injuries on the udder and the teats, in order to determine whether the animal  
25 should be subjected to any kind of treatment,  
- storing an identification of the animal if the latter is to be treated as a result of the examination,  
- using the stored identification for identifying the  
30 animal participating in an activity other than automatic milking, and  
- separating the identified animal from the herd.

35 21. A method according to claim 21, characterized in that said activity takes place remote from the automatic milking.

22. A method according to claim 21 or 22, characterized in that said activity comprises feeding the animal, for example with concentrate.

5

23. An arrangement for managing a herd of freely walking animals comprising an area (1, 21, 22) for receiving the animals and a separation device (3) located in said area for separating an animal from  
10 the herd, said device comprising enclosure means (12) defining a separation zone (11), and at least one entrance device (13) for permitting passage from the receiving area (1, 21, 22) to the separation zone (11), characterized in that the entrance device  
15 comprises a stall (13), having a front gate device (16) which in an open state permits passage from the stall (13) to the separation zone and in a closed state prevents passage between the stall (13) and the separation zone (11).

20

24. An arrangement according to claim 23, characterized in that the stall (13) has a rear gate device (17) which in an open state permits passage from the stall to the receiving area and vice versa,  
25 and in a closed state prevents passage between the stall and the receiving area.

25. An arrangement according to claim 23 or 24, characterized by identification means (19) provided  
30 for identifying an animal present in the stall (15).

26. An arrangement according to claim 25, characterized by control means (20) adapted to control the front gate device (16) and the rear gate  
35 device (17) in response to the identification means (19) identifying an animal present in the stall (13),

such that the front gate device (16) is opened and the rear gate device (17) is closed if the identified animal is to be separated.

5 27. An arrangement according to any one of claims 23 - 26, characterized in that the stall (13) is provided with a feeding device (18) for feeding an animal being present in the stall, for example with concentrate.

10

28. An arrangement according to any one of claims 23 - 27, characterized in that the separation device (3) comprises at least one exit device (14) forming a further animal passage leading from the separation zone (11) to the receiving area (1) and adapted to open and close said further animal passage.

15

29. An arrangement according to claim 28, characterized in that the exit device (14) comprises a further stall (15), the interior of which comprises said further animal passage, and that said further stall (15) comprises a gate device which in an open state permits passage between said further stall (15) and the receiving area (1, 21, 22) and in a closed state prevents passage between said further stall (15) and the receiving area (1, 21, 22).

20

25

30. An arrangement according to claim 28 or 29, characterized in that said exit device (14) comprises a feeding device (18).

30

31. An arrangement according to any one of claims 23 - 30, characterized in that the receiving area (1) comprises a first zone (21) and a second zone (22).

35



32. An arrangement according to claim 31, characterized in that the milking station (2) is provided in the first zone (21).

5 33. An arrangement according to claim 31 or 32, characterized in that the separation device (3) is provided in the first zone (21)

10 34. An arrangement according to any one of claims 31 - 33, characterized in that gate device (24) is provided between the first zone and the second zone.

15 35. A separation device for separating an animal from a herd of freely walking animals, comprising enclosure means (12) defining a separation zone (11), and at least one entrance device (13) for permitting passage from an area (1, 21, 22) for receiving the herd to the separation zone (11), said entrance device comprising a first stall (13), having a front gate device (16) which in an open state permits passage from the first stall (13) to the separation zone and in a closed state prevents passage between the first stall (13) and the separation zone (11), characterized in that the separation device  
20 comprises an exit device (14) having a second stall (15) with a front gate device (16) which in an open state permits passage from the second stall (15) to said area (1) and in a closed state prevents passage between the second stall (15) and said area (1).  
25

30

36. An arrangement according to claim 35, characterized by identification means (19) provided for identifying an animal present in at least one of the first and second stall (13, 14, 15).  
35

37. An arrangement according to claim 35 or 36,  
characterized in that the first stall (13) has a  
rear gate device (17) which in an open state permits  
passage from the stall to the receiving area and vice  
5 versa, and in a closed state prevents passage between  
the stall and the receiving area.

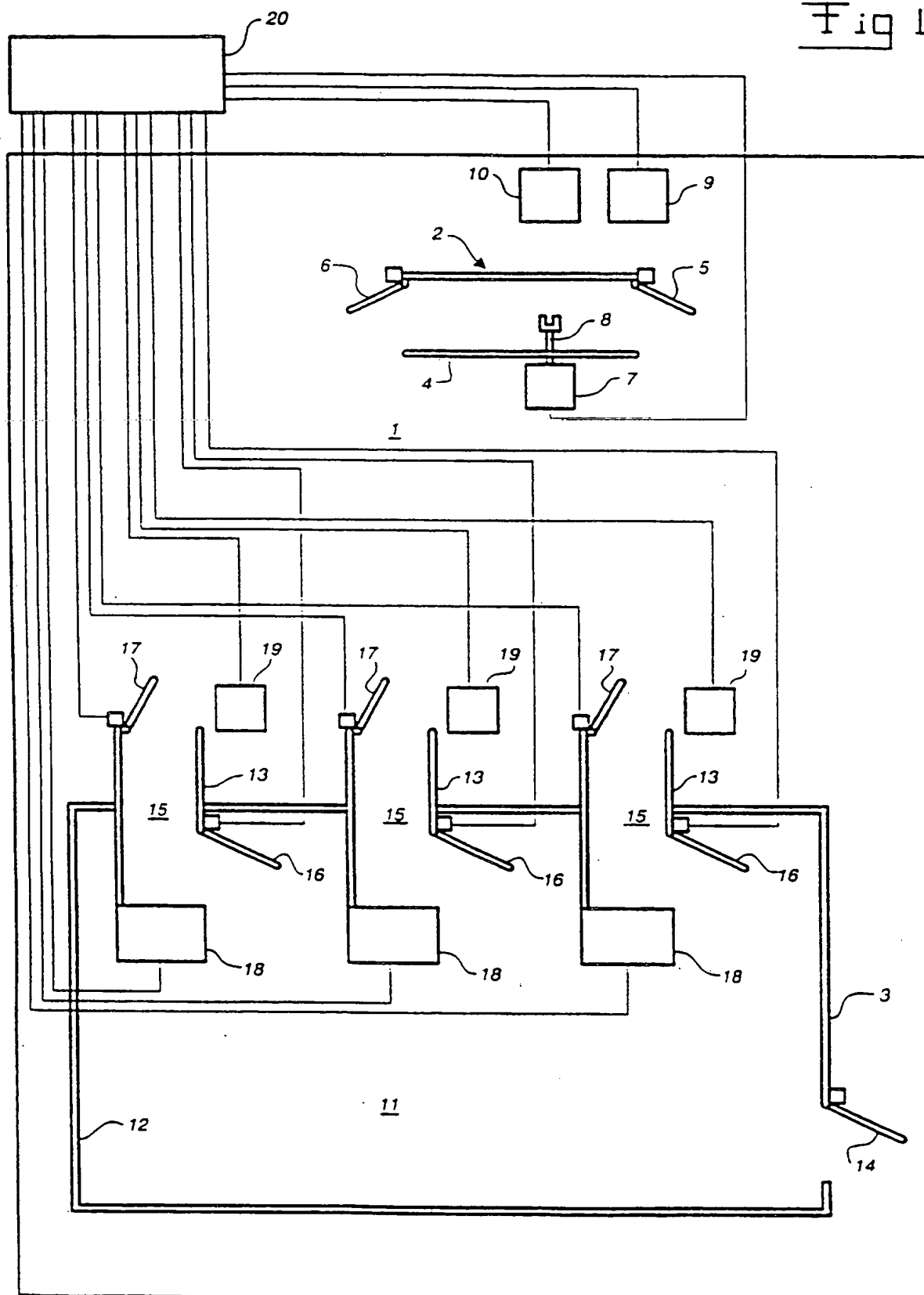
38. An arrangement according to claims 36 and 37,  
characterized by control means (20) adapted to  
10 control the front gate device (16) and the rear gate  
device (17) in response to the identification means  
(19) identifying an animal present in the stall (13),  
such that the front gate device (16) is opened and  
the rear gate device (17) is closed if the identified  
15 animal is to be separated.

39. An arrangement according to any one of claims  
35 - 38, characterized in that at least one of the  
first and second stall (13, 14, 15) is provided with  
20 a feeding device (18) for feeding an animal being  
present in the stall, for example with concentrate.

40. An arrangement according to any one of claim  
35 - 39, characterized in that the second stall (14)  
25 has a rear gate device (17) which in an open state  
permits passage from the second stall to the  
separation zone (11) and vice versa, and in a closed  
state prevents passage between the second stall and  
the separation zone (11).

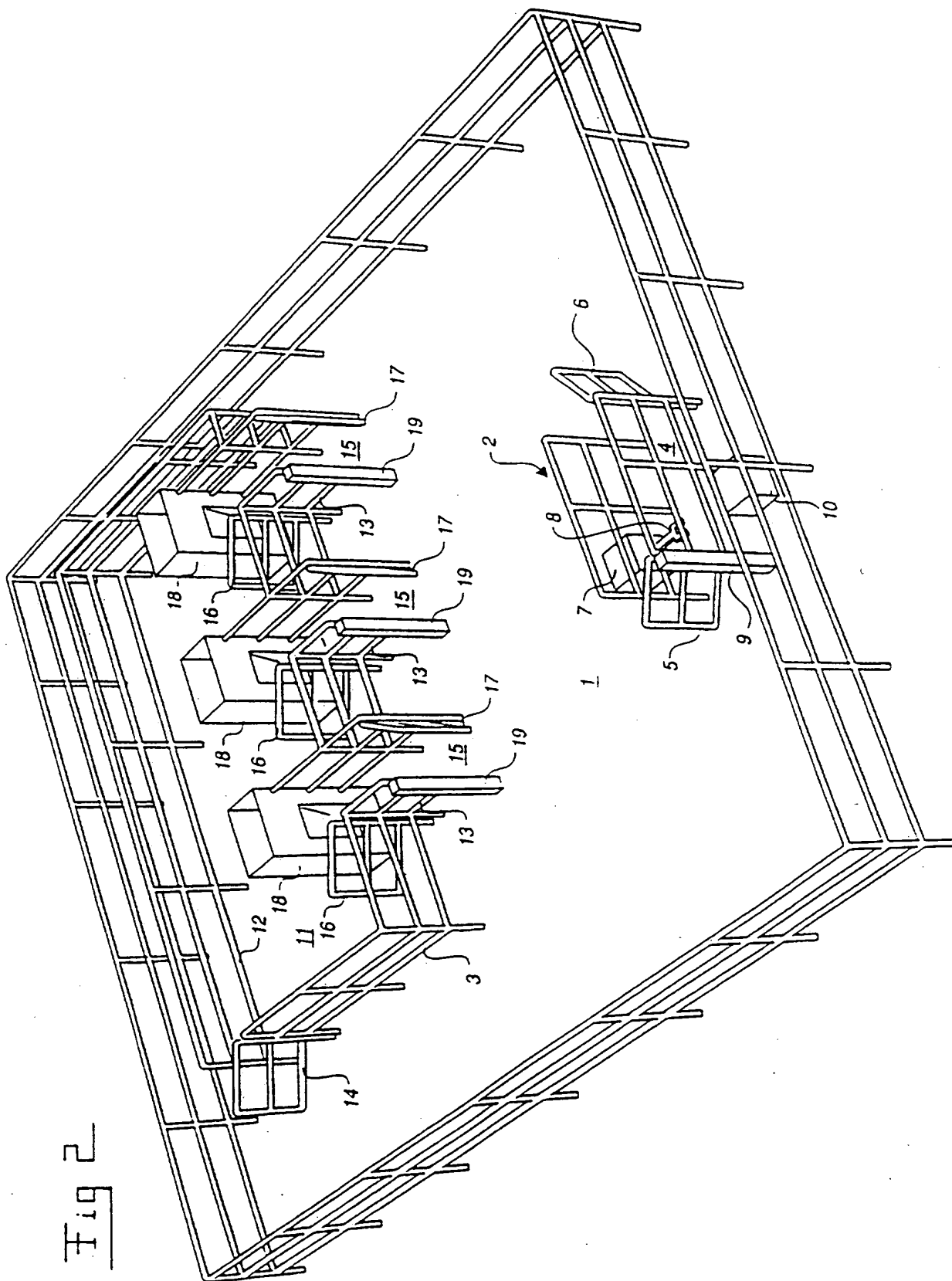
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Fig 1



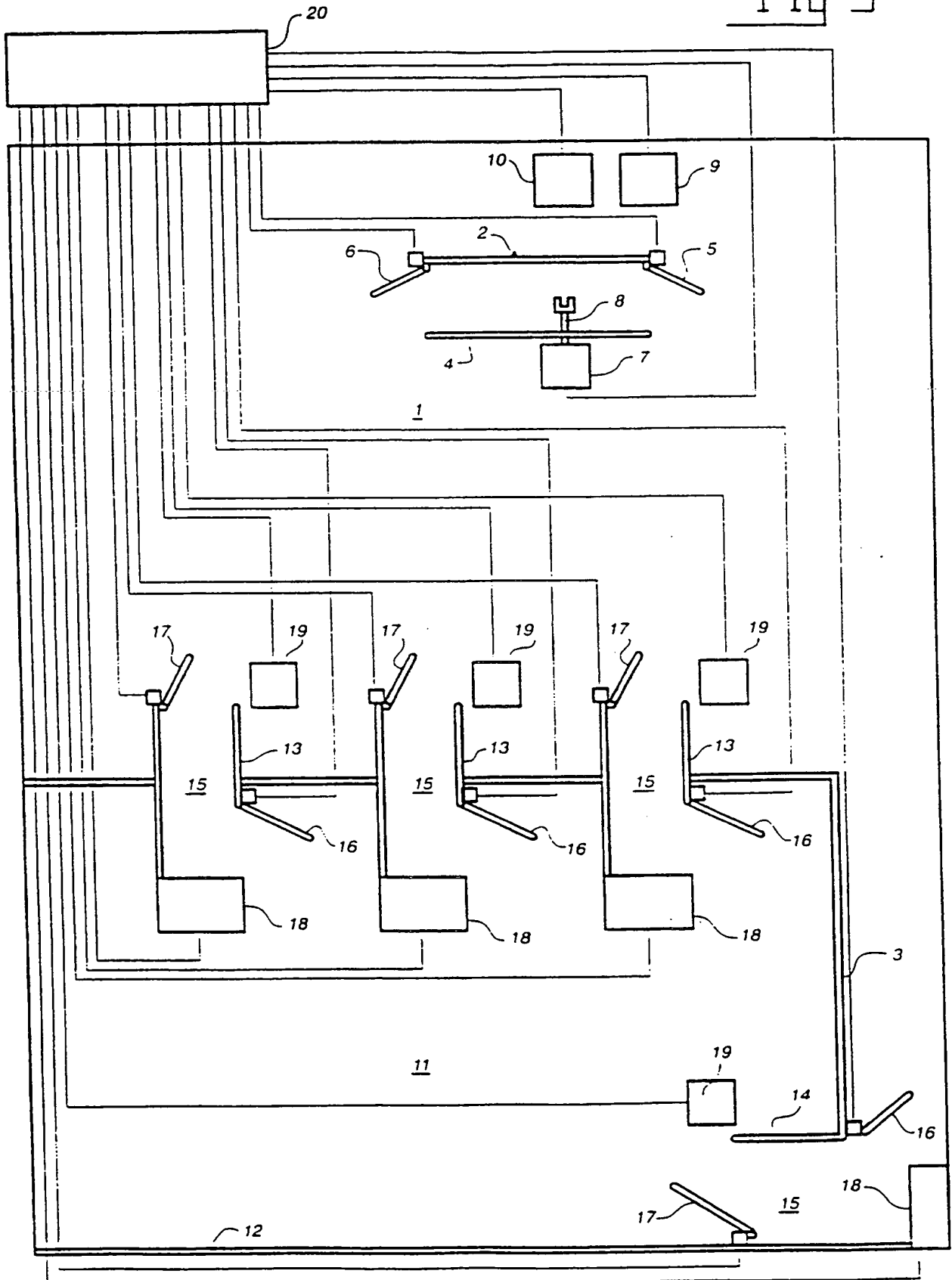
2/7

Fig 2

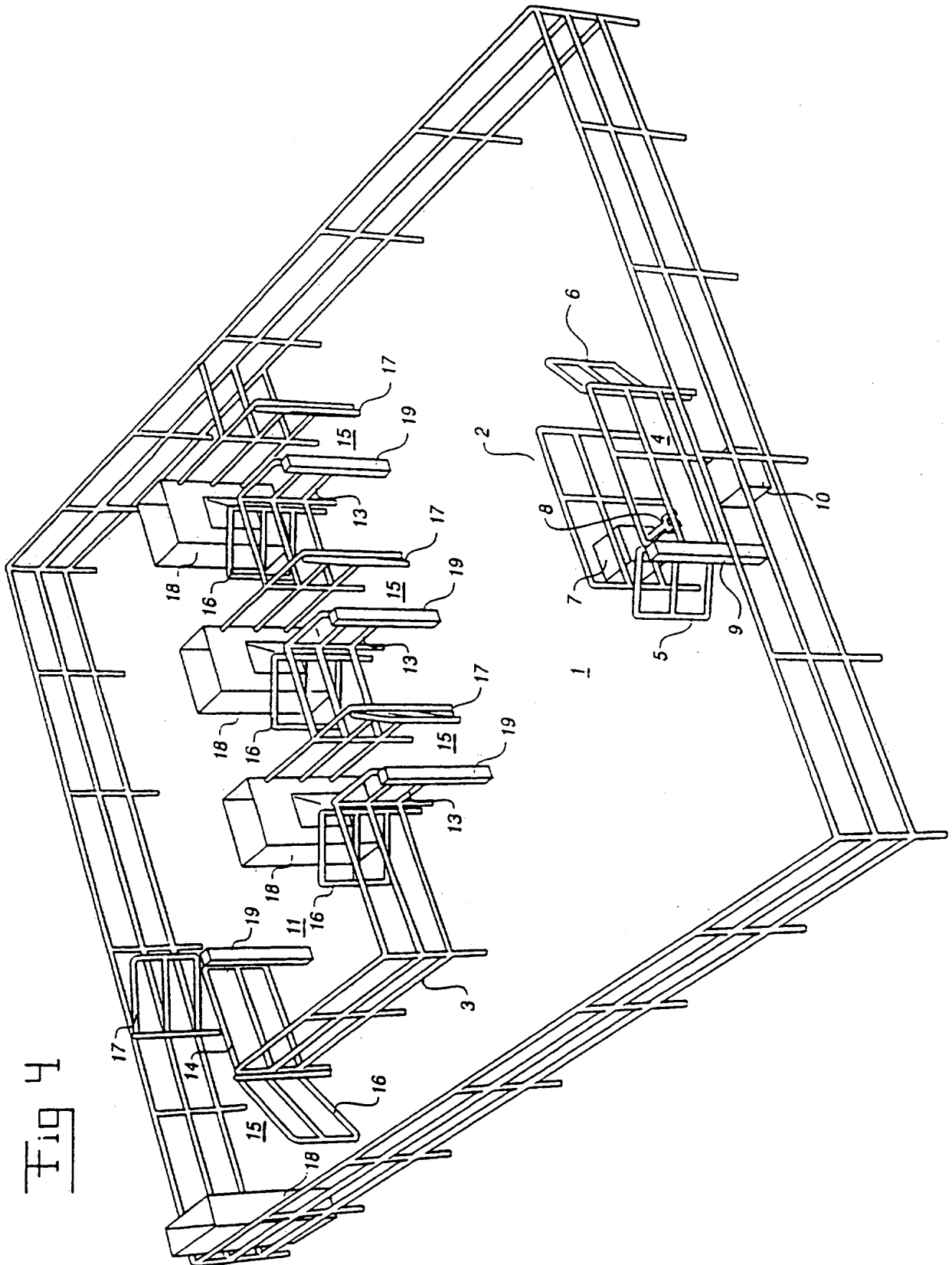


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Fig 3



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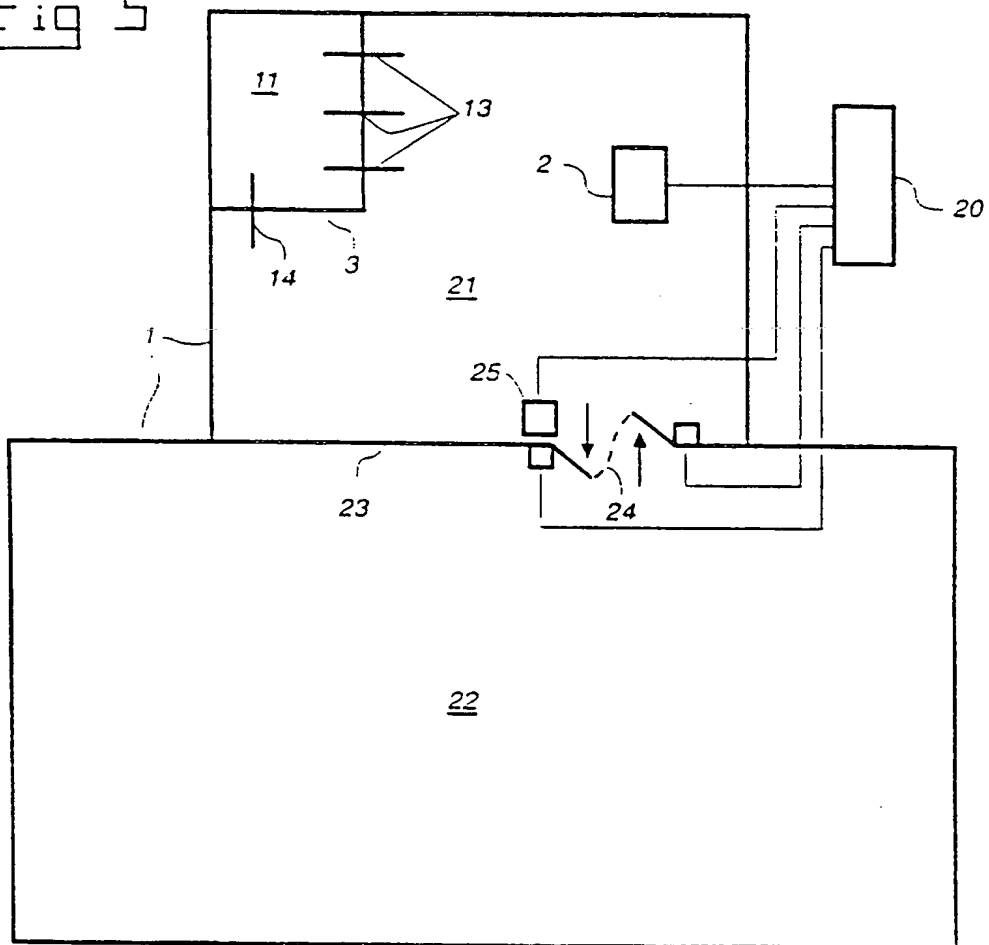
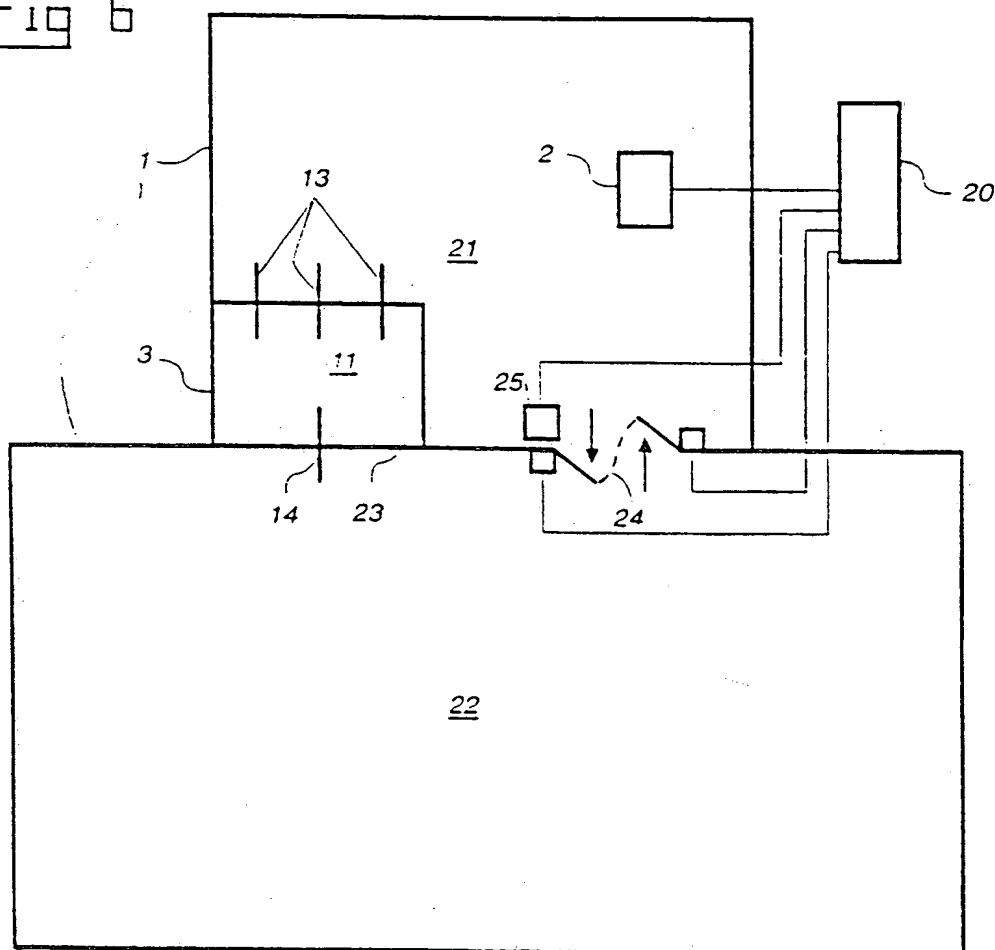
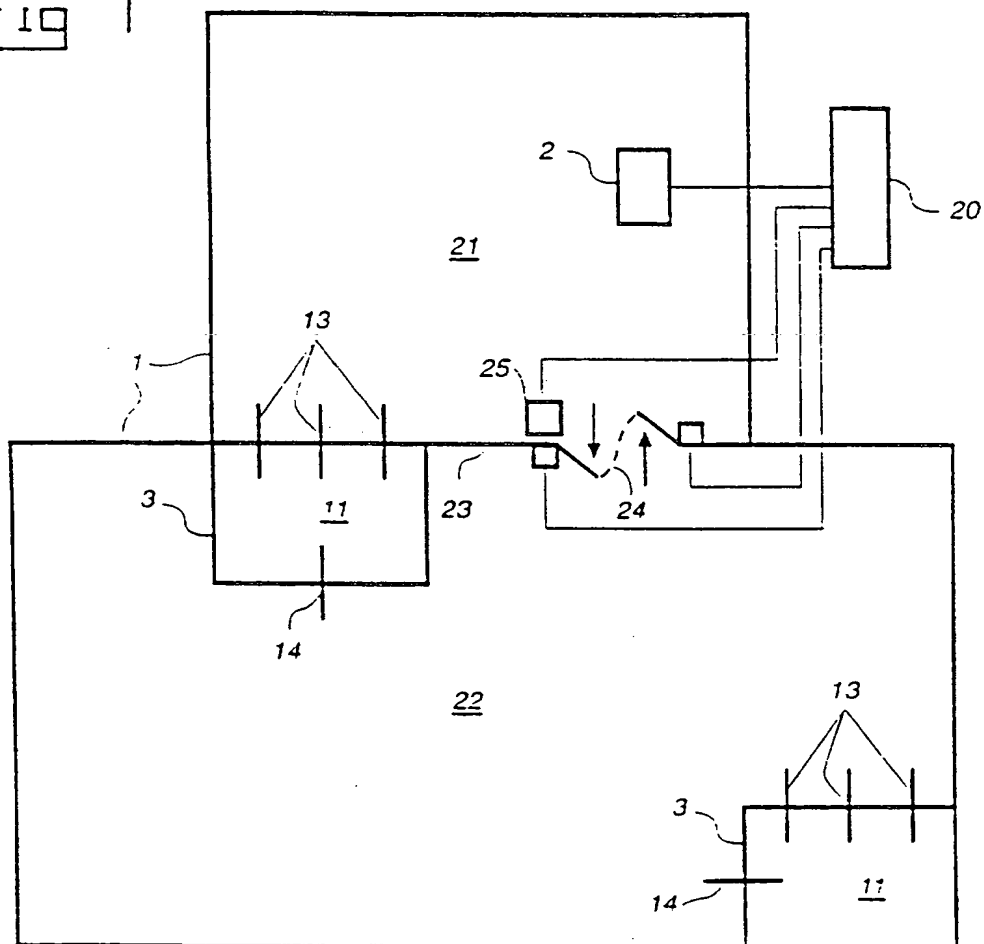
Fig 5

Fig 6



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Fig 7



## INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE 95/01570

## A. CLASSIFICATION OF SUBJECT MATTER

IPC6: A01K 1/12, A01K 11/00, A01K 15/04

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC6: A01K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

WPAT, CLAIMS, JAPIO

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0608941 A1 (MAASLAND N.V.), 3 August 1994 (03.08.94), column 2, line 49 - line 52; column 3, line 21 - line 27, figure 1, abstract	23-27
Y	--	35-40
Y	EP 0499428 A1 (DEC INTERNATIONAL, INC.), 19 August 1992 (19.08.92), figures 1-3, claim 1	35-40
P,X	EP 0636312 A1 (MAASLAND N.V.), 1 February 1995 (01.02.95), column 3, line 42 - column 4, line 21; column 6, line 18 - line 39, figure 1	23-26,28
	--	

☒ Further documents are listed in the continuation of Box C.☒ See patent family annex.

\* Special categories of cited documents:

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "B" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, each combination being obvious to a person skilled in the art

"Z" document member of the same patent family

Date of the actual completion of the international search

Date of mailing of the international search report

17 June 1996

19 -06- 1996

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# INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE 95/01570

## C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim N .
E,X	WO 9603031 A1 (PROLION B.V.), 8 February 1996 (08.02.96), figure 1, abstract -- -----	1,23,35

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/BE 95/01570

## Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:  
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

- \* An arrangement for managing a herd of freely walking animals to a milking station.
- \* An arrangement for separating an animal from the herd in an arrangement for managing a herd of freely walking animals.
- \* A separation device for separating an animal from a herd of freely walking animals.

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☒ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

☐  
☐

The additional search fees were accompanied by the applicant's protest.

No protest accompanied the payment of additional search fees.

# INTERNATIONAL SEARCH REPORT

J1/04/96

International application No.

PCT/SE 95/01570

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP-A1- 0608941	03/08/94	NONE	
EP-A1- 0499428	19/08/92	SE-T3- 0499428 AT-T- 122847 AU-B- 650715 AU-A- 1067592 DE-D,T- 69202586 EP-A,A- 0620969 IL-A- 100877 IL-A,D- 111397 US-A- 5183008	15/06/95 30/06/94 13/08/92 30/11/95 26/10/94 26/05/95 26/05/95 02/02/93
EP-A1- 0636312	01/02/95	NONE	
WO-A1- 9603031	08/02/96	NONE	

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